

USING MIND-MAPPING TO IMPROVE READING COMPREHENSION AND WRITING ACHIEVEMENTS OF THE 4TH SEMESTER STUDENTS OF STAIN CURUP

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Abstract: This research was aimed to find out whether or not there was a significant improvement in students' reading comprehension and writing achievements after they were taught by using Mind-mapping and there were significant differences in reading comprehension and writing achievements between the students who were taught by using mind-mapping and those who were not. This research also aimed to know the students' feedback about the use of mind-mapping in learning reading and writing. A quasi experimental method was applied in this research. There were 40 fourth semester students of English Education Study Program of STAIN Curup selected as the sample by using a purposive sampling technique. They were divided into experimental and control groups equally. The data were collected by using a reading comprehension test, a writing test, and a questionnaire. The results of the tests were analyzed quantitatively by using independent and paired sample t-tests and the results of the questionnaire were analyzed quantitatively by using simple percentage analysis and described qualitatively as well. The results of this research showed that there was a significant improvement in students' reading comprehension and writing achievements and there were also significant differences in reading comprehension and writing achievements between the students who were taught by using mind-mapping and those who were not. The students also showed positive feedback towards the use of mind-mapping. In conclusion, mind-mapping could improve the students' reading and writing achievement.

Keywords: *Reading comprehension, writing achievement, mind-mapping*

Reading and writing are two of the four literacy skills. They are important in English teaching and learning process. According to Geske and Ozola (2008, p. 71), reading and writing are the ground of almost all processes of learning in the 21st century. If students' reading literacy level is low, in most cases it tends to

show that they will have difficulties in the acquisition of other subjects (Geske & Ozola, 2008, p. 71).

In Indonesia, reading and writing still become a problem for the students. PISA 2012 shows that Indonesia in the 64th place out of 65 countries with the reading score 396. Indonesian students

score below the OECD average score which was 496 (OECD, 2012). Another survey which conducted by Progress in International Reading Literacy Study (PIRLS) (2011) revealed that 45 countries surveyed, Indonesia was placed in the ranked 42nd in reading achievement with the mean score 428 far below the international mean score 500. This evidence obviously indicated low achievement of Indonesian students to comprehend the text. In addition, writing is one of the subject-courses for language students in high education. It is essential but a difficult skill for EFL students to accomplish (Yan, 2005, p. 22).

Furthermore, writing is a complex activity, a social act which reflects the researcher's communicative skill which is difficult to develop and learn, especially in an EFL context (Shokrfour & Fallazadeh, 2007, p. 148). From those statements, the researcher concludes that writing is an important subject for EFL learners but it is not easy because the students should develop their communicative skill.

Similarly, at Sekolah Tinggi Agama Islam Negeri (STAIN) Curup there are also problems in reading and writing English. The researcher interviewed the lecturer who taught in English Study Program in STAIN Curup and she said that the students still got difficulties in reading and writing. The preliminary study result showed that their reading comprehension in the Average level with the mean score 56.26, while the result of students' writing final examination was 60 to 70. It means that they should improve their reading and writing to get better achievement.

To teach the four language skills, the teacher can apply teaching and learning techniques that can help

students improve their achievement. Based on the problem faced by the students in STAIN Curup, Mind-mapping is one of appropriate technique to teaching reading and writing. This technique is adopted mind-mapping technique which is developed by Buzan. Furthermore, mind-mapping uses sensory visual reminders in a pattern of related ideas (Deporter & Hernacki, 1992, p. 152), meaning that using mind-mapping can enhance original ideas and easily trigger memories. It is assumed as a technique to represent the students' understanding and a way that can help students improve their reading and writing.

From the previous explanation, the researcher believe that mind-mapping is a technique that can be applied in teaching reading and writing. Some previous studies show that mind-mapping can improve students reading and writing. Therefore, the researcher was interested in doing the study by using mind-mapping technique in teaching reading and writing. The title of the study is "Improving Reading Comprehension and Writing Achievement of the 4th Semester Students of STAIN Curup through Mind-mapping."

The problems in this study were described in the following research questions: (1) Was there any significant improvement in reading comprehension achievement of the fourth semester students of STAIN Curup after they were taught by using Mind-mapping?, (2) Was there any significant improvement in writing achievement of the fourth semester students of STAIN Curup after they were taught by using Mind-mapping?, (3) Was there any significant difference in reading comprehension achievement between the fourth semester students of STAIN

Curup who were taught by using Mind-mapping and those who were not?, (4) Was there any significant difference in writing achievement between the fourth semester students of STAIN Curup who were taught by using Mind-mapping and those who were not?, (5) What were the students feedbacks concerning the use of Mind-mapping in learning reading and writing?

METHODOLOGY

Research Method

This research applied a quasi-experimental research method. In this study, the researcher applied pre and post-test control group design. The independent variable of this research is mind-mapping and the dependent variables are reading comprehension and writing achievements.

Population and Sample

The population of this research was the fourth semester students of English Education Study Program, Faculty of Teaching Training and Education, STAIN Curup in 2013/2014 Academic year. There are five classes with the total number of 112 students.

The researcher chose the fourth semester students because they already had reading and writing classes in the previous semester. Before choosing the sample, the researcher has done IRI (Informal Reading Inventory) test provided by Jennings (2011) to know students' reading level. The researcher gave the test to class A, class B, class C, and class D. The researcher did not give the test to non regular class because only four classes taught by the same lecturer. In this research, the sample selected based on these criteria: the students were taught by the same lecturer and the students had the same

reading comprehension level. The students were at the level 5.

Data Collection

The reading test was used to know the students' reading comprehension achievement. There are seven aspects of students' reading comprehension as stated by Cooper and Lewi (1988); they are details, main idea, inference, cause and effect, reference, sequence and question related to vocabulary.

In this research the researcher applied 35 multiple choice questions. The student given a unity test; they asked to write an expository paragraph. The result of their writing was evaluated by three raters. The raters used the same writing rubric. The researcher gave a questionnaire to the students in order to know the feedback concerning the use of Mind-mapping in learning. The questionnaire was in the form of close and open ended questions. There were 4 questions would be answered by the students. For questions number 1 to 2, the researcher gave some choices of the answer. Then, the students chose their answer and gave the reason. For the question number 3, the researcher asked the students' opinion about their problem in using Mind-mapping and their solution. The last question, the researcher asked the students' opinion about the strengths and weaknesses of using mind-mapping in learning reading and writing skills.

Validity and Reliability

To measure the validity of the test, the researcher used content validity. For reading test, the researcher firstly asks judgment of expert to know the content validity. Then, the researcher try out 40 multiple choice questions to other group of students in the same level with the sample before give the test to the sample. The researcher will calculate by

using the method of Pearson (correlation item for total) in SPSS 22. At last the researcher got 35 questions of the reading test to be used as pretest and posttest. From the result of validity calculation, 35 questions were considered to be valid. For writing test, the researcher focused on content validity. The concern of content validity is the content of the test which reflects the content of the skill, language, or course being tested (Nation & Newton, 2009). The writing test in this research was focused on the students' ability to write an expository paragraph.

In this research, the researcher applied Cronbach's Alpha in the SPSS program for checking the reliability of reading test. According to Jonson and Christensen (2012, p.142), the Cronbach's Alpha for the research purpose "should generally be, at minimum, greater than or equal to 0.70." To check the reliability of the reading test, the researcher measured the reliability based on the results of try out. From the calculation of reliability, the results showed that for the reading test, the reliability score was 0.918.

Data Analyses

The data analyzed by using paired sample t-test for research questions number 1 and 2. Then, independent sample t-test applied for research questions number 3 and 4. While for the questionnaire, the researcher used simple percentage analysis and described the results by using qualitative analysis.

FINDINGS

Normality and Homogeneity Tests

Before analyzing the data, the researcher measured the normality of the reading test by using Shapiro-Wilk test on SPSS 22. The data were categorized

as normal data should have the value of output > 0.05 . The results of normality test showed that the significance values of the experimental reading pretest was 0.947 and in the control group was 0.364, while in the posttest, the significance values of experimental group was 0.384 and the control group was 0.582. Moreover, for the normality of the writing test, the significance values of the experimental writing pretest was 0.062 and in the control group was 0.640, while in the posttest, the significance values of experimental group was 0.450 and the control group was 0.470. Therefore, the values of significance level of reading comprehension and writing pretests and posttests in the experimental and control groups were higher than 0.05. Thus, it could be concluded that the data were normal.

To assess the homogeneity test, the researcher use Levene test through the application of SPSS program. The test categorized as homogeneity if the level of significance of Levene test is > 0.05 . The result of homogeneity test of students' reading and writing pretest and posttest scores in the experimental and control group showed that the results of homogeneity test for reading pretest was 0.085 and posttest was 0.789. Furthermore, the result of homogeneity in reading pretest-posttest of experimental group was 0.170 and the control group was 0.609. Meanwhile, the results of homogeneity in writing pretest was 0.059 and in posttest was 0.070. Moreover, the results of homogeneity in writing pretest-posttest of experimental group was 0.959 and the control group was 0.621. Since all of the significance values were greater than 0.05, it concluded that the data were homogeneous.

The Results of Reading Comprehension Test for Experimental and Control Groups

The results of the reading comprehension test were presented in the form of scores. The students' scores were classified into the following categories: (1) A corresponded to "Very Good" with the score interval 86-100, (2) B corresponded to "Good" with the score interval 71-85, (3) C corresponded to "Average" with the score interval 56-70, (4) D corresponded to "Poor" with the score interval 41-55, and (5) E corresponded to "Very Poor" with the score interval 0- 40. There were 35 questions in reading comprehension test.

The following table displays the summary of students' reading pretest and posttest in the experimental and control groups.

Table 1. The Result of Reading Test

	Reading			
	Experiment		Control Group	
	Pretest	Posttest	Pretest	Posttest
Min	34.	42.8	34.2	40.00
Max	60.	80.0	65.7	71.43
Sum	960.00	1297.14	980.00	1111.43
Mean	48.	64.8	49.0	55.57

As shown in Table 1, in the experimental group's pretest, the highest score was 60.00; the lowest was 34.29; the mean was 48.00. In the posttest, the highest score was 80.00; the lowest was 42.86; the mean was 64.86. Meanwhile, in the control group's pretest, the highest score was 65.71; the lowest was 34.29; the mean was 49.00. In the posttest, the highest score was 71.43; the lowest was 40.00; the mean was 55.57. Table 12 shows the students' reading scores distribution.

Table 2. Score Distribution of Students' Reading Comprehension Achievement in the Experimental and Control Groups

Score	Category	Experimental Group				Control Group			
		Pretest		Posttest		Pretest		Posttest	
		F	%	F	%	F	%	F	%
86 - 100	A (Very Good)	0	0	0	0	0	0	0	0
71 - 85	B (Good)	0	0	4	20	0	0	1	5
56 - 70	C (Average)	2	10	12	60	5	25	10	5
41 - 55	D (Poor)	16	80	4	20	10	50	8	40
0 - 40	E (Very Poor)	2	10	0	0	5	25	1	5

As shown in Table 2, the result of pretest for the experimental group showed that there was no student (0%) who was in the Very Good and Good category. There were 2 students (10%) in the Average category, 16 students (80%) were in the Poor category, and 2 students (10%) were in the Very Poor category. The result of posttest for the experimental group showed that there was no student (0%) who was in the Very Good and Very Poor category; there were 4 students (20%) in the Good category, 12 students (60%) were in the Average category, and 4 students (20%) were in the Poor category.

Meanwhile, the result of pretest of the control group showed that there was no student (0%) who was in the Good and Very Good category. There were 5 students (25%) in the Average category, 10 students (50%) were in the Poor category, and 5 students (25%) were in the Very Poor category. The result of the posttest for the control group showed that there was no student (0%) who was in the Very Good category. There was 1 student (5%) in the Good category, 10 students (50%) were in the Average category, 8 students (40%) were in the Poor category, and 1 student (5%) was in the Very Poor category.

The Results of Writing Test for Experimental and Control Groups

The result of students' writing pretest and posttest in the experimental and control groups were also presented in the form of scores. The scores of students' writing test were obtained from three raters who checked the students' writing test focusing on four criteria, namely: content, development, organization, and convention/language use.

The following table displays the summary of the students' writing pretest and posttest in the experimental and control groups.

Table 3. The Summary of Students' Writing Test Score

	Experimental		Control Group	
	Pretest	Posttest	Pretest	Posttest
Min	37.50	52.78	37.50	44.44
Max	63.89	79.17	58.33	62.50
Sum	938.91	1298.61	936.04	1071
Mea	46.94	64.93	46.80	53.55

Table 3 shows that the highest score for pretest of experimental group was 63.89; the lowest was 37.50; and the mean was 46.94. For the posttest of the experimental group, the highest score was 79.17; the lowest was 52.78; the mean was 64.93. Meanwhile, the control group's pretest showed that the highest score was 58.33; the lowest was 37.50; the mean was 46.80, while the posttest, the highest score was 62.50; the lowest was 44.44; and the mean was 53.55.

The distribution of students' writing pretest and posttest in experimental and control groups is presented on table 4.

Table 4 shows that the result of pretest for the experimental group showed that there was no student (0%) who was in the Very Good and Good

category; there were 3 students (15%) in the Average category, 11 students (55%) in the Poor category, and 6 students (30%) in the Very Poor category. The result of the posttest for the experimental group showed that there was no student (0%) who was in the Very Good and Very Poor category. There were 4 students (20%) in the Good category, 14 students (70%) in the Average category, and 2 students (20%) in the Poor category.

Table 4. The Score Distribution of Students' Writing Test in the Experimental and Control Groups

Score Interval	Category	Experimental Group				Control Group			
		Pretest		Posttest		Pretest		Posttest	
		F	%	F	%	F	%	F	%
86 - 100	A (Very Good)	0	0	0	0	0	0	0	0
71 - 85	B (Good)	0	0	4	20	0	0	0	0
56 - 70	C (Average)	3	15	14	70	1	5	7	35
41 - 55	D (Poor)	11	55	2	20	16	80	13	65
0 - 40	E (Very Poor)	6	30	0	0	3	15	0	0

Meanwhile, the result of pretest for the control group showed that there was no student (0%) who was in the Very Good and Good category. There were 1 student (5%) in the Average category, 16 students (80%) in the Poor category, and 3 students (15%) in the Very Poor category. For the posttest, there was no student (0%) who was in the Very Good, Good, and Very Poor category. There were 7 students (35%) in the Average category, 13 students (65%) in the Poor category.

The Results of t-test Analyses

In this research, the researcher applied two statistical analyses, namely: (1) Paired sample t-test and (2) Independent sample t-test. Paired sample t-test was used to answer the questions research number 1 and 2. Whereas,

independent sample t-test was used to answer the questions research number 3 and 4. Table 5 presents the results of the analyses.

Based on the table above, it could be figured out that the mean score of students' reading pretest was 48.00, and the mean score of students' reading posttest was 64.86. Therefore, the mean difference between students' reading pretest and posttest was 16.86. In addition, the significance level of students' reading comprehension was 0.000. It was lower than the alpha (0.05). These results showed that

there was a significant improvement in the students' reading comprehension after the treatment was given.

In addition, the result of students writing achievement in the experimental group pretest was 46.94 and in the posttest was 64.93. Hence, the mean difference of the writing pretest and posttest score was 17.99. Then, the level of significance was 0.000. This result showed that there was significant improvements in students' writing achievement after the treatment because the significant level of students' writing achievement was lower than 0.05.

Table 5. The Results of the Paired and Independent Sample t-test Analyses of Reading Comprehension and Writing Achievement

Variables	Pretest		Posttest		Mean Diff Pre and Posttest Exp within	Mean Diff Pre and Posttest Cont within	Mean Diff Posttest between Exp and Control	T value/ sig 2 tailed Pre and Posttest between Exp within	T value/ sig 2 tailed Pre and Posttest between Cont within	T value/ sig 2 tailed Posttest between Exp and Cont
	Mean Exp	Mean Cont	Mean Exp	Mean Cont						
Reading Comprehension	48.00	49.00	64.86	55.57	16.86	6.57	9.29	9.872	3.437	3.288
a. Detail	2.80	2.40	4.65	3.45	1.85	1.05	1.2	12.333	2.868	3.926
b. Main Idea	2.20	2.65	3.70	3.00	1.5	0.35	0.7	13.077	1.324	2.052
c. Inference	0.80	1.35	2.20	2.00	1.4	0.65	0.2	12.457	3.901	0.809
d. Cause-Effect	2.55	2.80	3.25	3.05	0.7	0.25	0.2	5.480	1.045	0.954
e. Reference	2.90	2.70	3.55	2.95	0.65	0.25	0.6	3.901	0.925	2.214
f. Sequence	2.90	2.55	2.65	2.65	-0.25	0.1	0	-0.925	0.462	0.000
g. Vocabulary	2.65	2.70	2.70	2.35	0.05	-0.35	0.35	0.195	-1.234	1.096
Writing Achievement	46.94	46.80	64.93	53.55	17.99	6.75	11.38	6.616	5.052	5.430
a. Content	2.76	2.81	3.98	3.16	1.22	0.35	0.82	6.482	2.512	5.146
b. Development	2.81	2.63	3.89	3.15	1.08	0.52	0.74	7.251	3.322	5.189
c. Organization	2.95	2.73	3.90	3.33	0.95	0.6	0.57	4.906	4.699	3.534
d. Language Use	2.73	3.05	3.80	3.20	1.07	0.15	0.6	5.530	1.187	3.474

The result of reading in the control group pretest was 49.00 and in the posttest were 55.57. It means that there was 6.57 differences in the mean of students' reading comprehension score. While in writing, the mean difference was 6.75 when the pretest score was 46.80 and the posttest score was 53.55.

The result of the significance level of students' reading comprehension in the control group was 0.003. This result was lower than the alpha (0.05). In short, the reading comprehension has a significant improvement.

Furthermore, the significance level of students' writing achievement was 0.000 and it was also lower than the alpha. In sum, there were also significant improvements in students' reading comprehension and writing achievement in the control group.

In order to know the significant difference between students in the experimental and control group, the researcher used independent sample t-test in SPSS 22.

There was a significant difference of posttest score between experimental and control group when the level of significance < the alpha value (0.05). The mean score of reading posttest in the experimental group was 64.86 and in the control group was 55.57. Therefore, there were 9.28450 differences in the mean of both groups. The significance level of students' reading comprehension was 0.002. This result showed that there was a significant difference of students' reading comprehension because the significance level was lower than alpha (0.05).

The same way was used to calculate the result of independent sample t-test of students' writing

achievement. As the result, the mean score of students writing achievement posttest in the experimental group was 64.93 and in the control group was 53.55. There was 11.38050 difference between the mean of these groups.

Based on the results presented in Table 5, the significance level of students' writing achievement score was 0.000. It means that there was a significant difference between students' writing achievement in the experimental and control group.

The Results of Students' Reading Comprehension and Writing Achievement in Each Aspect

As previously discussed, reading comprehension and writing achievement had some aspects which could be calculated to know whether or not these aspects improved during the treatment.

As shown in Table 5, there were some aspects which increased significantly and some others were not. It is said significantly improved when the value of t-obtained was higher than t-table or the value of significance level was lower than alpha (0.05).

For the aspects of reading, there were 5 aspects that significantly improved and the rest did not. In the first aspect, detail, the t-obtained was 12.333 and the value of the level significant 2 tailed was 0.000. It means that the detail's aspect increased significantly after the treatment. Then, in terms of main idea's aspect, the value of t-obtained was 13.077 and the level of significant 2 tailed was 0.000. It also indicated that this second aspect increased significantly. The third aspect, named inference, has 12.457 points of the value of t-obtain and 0.000 in the significant 2 tailed level. The fourth

aspect, cause-effect, the t-obtained was 5.480 and the value of the level significant 2 tailed was 0.000. It means that the cause-effect's aspect increased significantly after the treatment. The fifth aspect, named reference, has 3.901 points of the value of t-obtain and 0.001 in the significant 2 tailed level. This result shows that the level of significant 2 tailed was lower than the alpha (0.05). It means that two aspects did not significantly increase after the treatment. Then, the sequence aspect has the value of t-obtained -0.925 and the level significant 2 tailed 0.367. This result was also not significantly increased. For the last aspect, the t-obtained was 0.195 and the level of significant 2 tailed was 0.847. These score pointed out that the last aspect of reading, vocabulary, not significantly increased and it was higher than the alpha (0.05). As the conclusion, the reading comprehension's aspects which were increased significantly; detail, main idea, inference, cause-effect, and reference.

Meanwhile, in writing achievement aspects there were no aspect that was not significantly improved. All of the aspects (content, development, organization, and language use) were significantly improved with the value of t-obtained which was higher than the critical value of t-table and the value of the significant 2 tailed level was lower than the alpha.

On the other hand, the reading comprehension aspects in control group have different results. Five aspects (main idea, cause effect, reference, sequence, and vocabulary) were not significantly improved with the p value of all those aspect were higher than 0.05. While, two

aspects (detail and inference) were improved significantly with the p value of all those aspect were lower than 0.05. In contrast, three aspects of writing (content, development, and organization) in control group were significantly improved and one aspect (language use) was not significantly improved.

Moreover, the results of independent sample t-test of students' reading comprehension score in the experimental and control group were not significantly different in each aspects. It was because all of the aspects of reading comprehension had a higher p value than the alpha. In the other hand, for the aspects of writing, all of the aspect in experimental group were significantly improved and in control group there were 3 aspects which were significantly improved (content, development and organization). While the language usage's aspect was the only one aspect which was not improved significantly.

The Result of Students' Feedback concerning to the Use of Mind-mapping in

Learning Reading and Writing

As stated in data collection, the researcher administered questionnaire to find out about students' feedback towards the use of Mind-mapping to improve students reading comprehension and writing achievement. This questionnaire consisted of 4 questions which had close and open ended answers. The results of the analyses of the questionnaire are shown in following table.

Table 6. The Result of the Analyses for Question Number 1

Question	Reading Skill		Writing Skill		Reading and Writing Skills	
	F	%	F	%	F	%
According to You, the use of Mind-Mapping is more effective to improve: a. Reading skill b. Writing skill c. Reading and writing skill	1	5	10	50	9	45

Table 6 showed that the result of the analyses for question number 1. There were 1 out of 20 students (5%) who chose 'reading' as her answer. She chose reading because using mind-mapping made her easier in understanding the content of a text. Then, there were 10 students (50%) who chose 'writing' as their answer. They chose writing because made them easier in arrange a paragraph. Another 9 students (45%) chose 'reading and writing' as their answer because using Mind-mapping trained them in understanding the content of a text in detail. After they read a text, they had a description before they write. In addition, mind-mapping make their writing more structured.

Table 7. The Result of the Analyses for Question Number 2

Question	F	%	F	%
In doing the task by using Mind-Mapping, You are more comfortable when working: a. With a group b. Individually	18	90	2	10

The result of the analyses for question number 2 showed that most of students (18 students (90%) chose that working with a group was the best way

to complete the mind- mapping. The reasons behind this answer were because that every student could share and discuss their ideas about the topic. Then, students with high English proficiency could help students to understand the material easily.

On the contrary, there were 2 students (10%) who chose to work individually as the best way to complete the mind-mapping. These students felt too hard to concentrate when they were on a group. Thus, by working individually, they could concentrate on the task and no one could disturb them when they were working.

Table 8. Result of Students Problem and Problem Solving towards the Use of Mind- Mapping

Problem	Problem-Solving
Many students felt difficult when they should draw.	The student make Mind-Mapping through writing the key word, give arrow and drawing with capabilities that approach the actual image.
The student felt difficult to find the ideas and determine the points that would be created in mind-mapping if the theme is not understood.	The student discussed with their friend by working in groups

Table 8 showed that the students found some difficulties in making mind-mapping. First, many of them felt difficult when they should draw. They solve the problem through writing the key word, give arrow and drawing with capabilities that approach the actual image. Second, if the theme is not understood, it is difficult to find the ideas and determine the points that would be created in mind-mapping. To solve this problem, they discussed with their friend by working in groups.

The last questions in the questionnaire asked about the students comments towards the use of mind-mapping. Based on the students' responses, there were some strengths and weaknesses in the use of mind-mapping. Table 9 presents the summary of the students' comments.

Table 9. Result of Students Feedback towards the Use of Mind-mapping

Strengths	Weaknesses
1. It makes learning easier and it could motivate students to learn.	1. Some students felt difficult when make mind-mapping because not all students able to draw.
2. It recording many ideas in a short amount of time.	2. Revisions can be time-consuming.
3. It makes additions easy	3. Less knowledge make students difficult to enlarge the idea.
4. It makes the structure of arguments immediately visible.	4. It is challenge to keep mind maps logical and consistent.
5. It makes knowledge more memorable.	
6. Teaching and learning process not be monotonous.	

Finally, as presented in table 9, there were various responses of the students towards the use of mind-mapping in learning reading and writing.

While there were more strengths than the weaknesses. Therefore, it showed that students had good perceptions or positive feedback towards the use of mind-mapping in learning reading and writing.

DISCUSSION

Based on the results of the research some interpretations are made. First, using Mind-mapping in teaching reading and writing could improve the students' achievement. Before giving the treatment there was no student in Good category but after giving the treatment there were some students in Good category. Meanwhile, there still no one of the student in Very Good category because it was not easy to get the high score. Second, Mind-mapping was more effective to improve writing skill because it helps the students' writing more structured. Third, Mind-mapping made the students' more comfortable when working with a group than individually because they could discuss and help each other. Last, there were some strengths and weaknesses using Mind-mapping in teaching reading and writing because there was no perfect technique in teaching and learning.

Moreover, the significant improvements can be seen on the 5 out of 7 aspects of reading in the experimental group. These 5 aspects namely; detail, main idea, inference, cause-effect, and reference. It was caused by some possible reasons such as an activity which demanded them to comprehend the text by mapping the content of a text. Through this activity, the main idea, detail, inference, cause-effect, and reference aspects of reading were exposed more than the other 2 aspects because the researcher was not pay more attention to sequence

and vocabulary aspects. Therefore, there was a significant difference in reading comprehension between students who were taught by using mind-mapping and those who are not. It is shown by students' scores after being given a treatment in experimental group which were higher than students' scores in control group.

The finding was similar to some studies which found significant differences in the students' reading comprehension when the students were taught by using mind-mapping (Moi & Lian, 2007; Al-Jarf, 2009; Siriphanich & Laohawiriyanon, 2010).

As previously discussed, there were all of the writing aspects which improved significantly in this research (content, development, organization, and language use). Based on the mean score, the aspect of content was the highest point than the other aspect. The point was 3.98 because content was the core aspect in writing. To get a good writing the students should know the content of what they were wrote. It was also believed that writing about a text improve comprehension, as it helps students make connections between what they read, know, understand, and think (Carr, 2002).

The point for organization was 3.90; it was probably because the students tended to think step by step before they start to write and also during the treatment, the researcher explained how to write a paragraph. Moreover, the point of development was 3.89 because to develop their writing was not easy. They should think a good reason to get a good result. While, language use was the lowest point 3.80; it might be caused, the researcher did not really focus on their grammar and punctuation, and it was because of the lack of time.

Dealing with students' writing achievement, this research also found that there was a significant difference in writing achievement between students who were taught by using mind-mapping and those who are not.

The result was in line with the previous related study which found that there was a significant improvement in students' writing ability by using mind-mapping (Riswanto & Putra, 2012). It was also supported by the students' feedback on the questionnaire which most of students chose writing skill that could be improved by using Mind-mapping because make them easier in arranged a paragraph.

The result of students reading comprehension in the control group showed that five aspects (main idea, cause effect, reference, sequence, and vocabulary) were not significantly improved and two aspects (detail and inference) were improved significantly. It was because the treatment for experimental group exposed more in writing skill, so their reading skill could not maximally used. It was also in line with the result of students' comments in questionnaire which said that the treatment mostly improved them in writing. Then, writing in control group had a lower level of significance than the result of the experimental group.

From the results of the questionnaire, the researcher can figure out that there was a positive feedback from the students towards the use of mind-mapping. The students agreed that this technique could increase their reading comprehension and writing achievement.

It had been proven by the students' posttest of reading and writing in experimental group which improved

significantly after the treatment. This improvement could be caused by the effectiveness of the technique. There were 9 students said that mind-mapping were effective to improve their reading comprehension and writing achievement. This finding was similar to Nurlaila findings (2013) that most students (86.1%) gave positive responses toward the use of mind-mapping technique in writing. Then, Chiou findings (2008) showed that the whole experimental group was more positive about the usefulness of concept mapping in enhancing learning effectiveness after they took the concept mapping course.

CONCLUSION AND SUGGESTIONS

Based on the results of the analyses and interpretations in the previous chapter, several conclusions can be drawn.

First, there was a significant improvement in reading comprehension after the students were taught by using mind-mapping. Second, there was a significant improvement in writing achievement after the students were taught by using mind-mapping. Third, there was a significant difference in reading comprehension achievement between the students who were taught by using mind-mapping and those who were not. Fourth, there was a significant difference in writing achievement between the students who were taught by using mind-mapping and those who were not. Then, the students gave various feedbacks towards the use of mind-mapping in learning reading and writing. Most of them said that using mind-mapping in learning was more effective to improve their writing rather than their reading. The students also said

that working in group was the best way to increase their knowledge in learning process. Finally, using mind-mapping gave appositve effect in improving students' reading comprehension and writing achievement.

Based on the conclusions, there are some suggestions: for English teachers, using mind-mapping in learning can be an alternative way in teaching reading and writing; for students, the contribution of mind-mapping is also recommended for better experience in learning; for the researchers who want to conduct similar research, it is recommended to do a preliminary study about the targeted sample. Preliminary study are useful to clarify the problem, know exactly what will be do for the research, and can determine the proper way to analyze the data.

REFERENCES

- Carr, S. (2002). Assessing learning processes: Useful information for teachers and students. *Intervention in School and Clinic*, 37, 156-162.
- Chiou, C. (2008). The effect of concept mapping on students' learning achievements and interests. *Innovations in Education and Teaching International*, 45(4), 375-387. Retrieved from <http://web2integration.pbworks.com/f/The+effect+of+concept+mapping+on+students%E2%80%99+learning+achievements.pdf>
- Cooper, S., & Lewi, L. (1988). Communication skills. *Encyclopedia of Education*,

- 17(5),126-133. Retrieved from <https://docs.google.com>
- Deporter, B., & Hernacki, M. (1992). *Quantum learning*. New York, NY: Dell Publishing.
- Geske, A., & Ozola, A. (2008). Factors influencing reading literacy at primary school level. *Problems of Education in the 21st Century*, 6, 71-77. Retrieved from <http://www.jbse.webinfo.lt/71-77.Geske.pdf>
- Jennings, J. (2001). Jennings informal reading assessment. Retrieved from http://wps.ablongman.com/wps/media/objects/2688/2753469/Rich_k_AppD.pdf
- Johnson, B., & Christensen, L. (2012). *Educational research: Quantitative, qualitative, and mixed approaches* (4th ed). Thousand Oaks, CA: SAGE Publication.
- Moi. W. G., & Lian. O. L. (2007). Introducing mind map in comprehension. *Educational Research Association*, 1 – 9. Retrieved from <http://conference.cripp.nie.edu.sg/2007/paper/papers/LAN469.pdf>
- Nation, I. S. P., & Newton, J. (2009). *Teaching ESL/EFL listening and speaking*. New York, NY: Routledge.
- Nurlaila, A. P. (2013). The use of mind mapping technique in writing descriptive text. *Journal of English and Education*, 1(2), 9-15. Retrieved from <http://ejournal.upi.edu/index.php/L-E/article/view/578>
- OECD. (2012). *PISA 2012 results in focus: What 15-year-olds know and what they can do with what they know*. Retrieved from <http://www.oecd.org/pisa/keyfindings/pisa-2012-results-overview.pdf>
- PIRLS. (2011). *Assessment framework for and specifications*. Boston, MA: International Association for the Evaluation of Educational Achievement.
- Riswanto & Putra, P. P. (2012). The Use of Mind Mapping Strategy in the Teaching of Writing at SMAN 3 Bengkulu, Indonesia. *International Journal of Humanities and Social Science*, 2(21), 60-68. Retrieved from http://www.ijhssnet.com/journals/Vol_2_No_21_November_2012/8.pdf
- Shokrfour, N., & Fallazadeh, M. H. (2007). A survey of the students and interns' EFL writing problems in Shiraz University of Medical Science. (online). *Asian EFL Journal*, 9(1), 147-163. Retrieved from http://www.asian-efl-journal.com/March_2007_EBook.pdf
- Siriphanich, P., & Laohawiriyanon, C. (2010). Using mind-mapping technique to improve reading comprehension ability of Thai EFL University Students. *International Conference on Humanities and Social Sciences*, 2(1), 1-13. Retrieved from <http://fs.libarts.psu.ac.th/research/conference/Proceedings2/article/4pdf/001.pdf>
- Yan, G. (2005). A process genre model for teaching writing. *English*

Teaching Forum,43(3), 18-26.
Retrieved from
http://ivantrainer.weebly.com/uploads/1/0/3/0/10309088/teaching_writing.pdf

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